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Author(s): John A. C. Greppin

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Comments on Early Armenian Knowledge of Botany As Revealed in the Geography of Ananias of Shirak

The *Geography* of the seventh-century Armenian author, Ananias of Shirak, is examined, first, for its position within early Armenian literature and, then, with special reference to its botanical observations.

With the publication of Robert Hewsen's annotated translation (1992) of the *Geography* of Ananias of Shirak (Anania Shirakatsi), scholars now have much easier access to the data contained in this text.¹ Numerous questions have been answered; of especial import is the continuing problem of the identity of the author of the *Geography*, for certain manuscript versions clearly say that the *Geography* was the product of Moses Khorenatsi, the "father" of Armenian history. Hewsen shows that it is significant that only one early manuscript copied before 1700 listed Khorenatsi as the author; he demonstrates that numerous phrases in the *Geography* are duplicated in other works of Ananias. Further, most estimates of the century in which the text was written point to a time coincidental with the period of Ananias' life. The reason for the suppression of Ananias' name as author can be attributed to the bad clerical odor into which this secular author had fallen. The advantages of using, as an author, such a famous name as Khorenatsi are obvious. The strongest argument against Ananias' authorship is the persistent theme that this *Geography* was written in the early seventh century, before the catastrophic arrival of the Arabs (and thus before Ananias reached maturity), since there is little reference to the Arab's presence. Hewsen replies that the impact of the Arab invasion may not have been significant in all parts of Armenia. Or perhaps Ananias simply did not care, for patriotic reasons, to acknowledge the obtrusive presence of the Arabs. This is not a wholly satisfying response, though we remember that to complex questions there are often answers that are not entirely orderly.

This Armenian *Geography* surely reflects the Greek and Roman works preceding it, of which the most com-

plete are those of Strabo, Pliny, and Ptolemy. However, Ananias' text cannot be shown to be more indebted to one than the other of those earlier works, and Ananias makes numerous errors of his own, revealing that he had, if not a consistently accurate mind, at least an independent one.² The author does make clear that he was influenced by the now lost Greek *Geography* of the fourth-century mathematician Pappus. This would seem to be true (and not an addition by a later copyist) since few modern scholars, outside of Armenia, believe such a text could have been done independently by someone so presumably provincial as a seventh-century Armenian. Yet it is the consideration of most specialists, including Hewsen, that much of the material in Ananias' *Geography* results from his own scholarship, and his own independent investigation. Certainly his work on the Caucasus has details nowhere else available.

There are two textual traditions: the long (L) and the short (S). Among others, the Yerevan scholar A. G. Abrahamian³ has argued that S is the original, and L simply an expansion of it done with commercial intent at a later date. This thesis is acceptable if we consider only the Armenian section of Ananias' *Geography*, which could have been expanded in L by an Armenian editor of a later date. However, it does not explain why there is so much additional material in L, such as that about Ptolemaic Egypt; an author capable of producing that data would have been independently able to write his own text. Consensus, accepted by Hewsen, points to

¹ Caravan books published, in 1994, with an introduction by Hewsen, the Armenian texts of both long and short versions of the *Geography*, and a reproduction of the sole manuscript of the long version.

² Ananias was one of the greatest Armenian scholars of his day; he received his academic training in Trebizond. Half of his surviving writings deal with mathematics, cosmology or geography, but he also wrote on precious stones, and various discourses on the festivals of the Christian Church. He probably never took holy orders.

³ Cited in Hewsen 1992: 16.

L as the original text, while the abridgement, S, is secondary to it.

This paper will concern itself with certain botanical terms which appear in the text. I will also comment on several of these words the meaning for which is unknown to Hewsens and the earlier modern commentators on this *Geography*. There is frequent mention of terms for minerals, plants, avifauna, mammals, and even lizards and insects. The animals are mentioned because they are often exotic. Ananias cites the bonasus, Gk. βόνασος, a hornless bison, mentioned most vividly in Pliny; when angered the animal throws its dung at opponents (pp. 47, 47A);⁴ in addition he reports on the customary exotic but distant animals like the dog-lion *ariwcašun*⁵ and horses-tigers *vagerajik*.⁶

Not only fauna is exotic; minerals can be quite remarkable too. On the isle of Corsica, gold and silver are found which grow in the earth like the asparagus (p. 47A).⁷ Another mineral, cinnabar, is mentioned (pp. 50, 50A),⁸ used as a medicament. The mineral κίνναβαρι⁹ which Ananias mentions (pp. 70, 70A)¹⁰ is a particular red dye, found in one of the districts of Armenia near Mt. Ararat. Here its source is not a mineral, but a worm, which when crushed, gives out a deep red pigment. There are parallels to this fantastic worm; one is noted by Dioscorides,¹¹ who says that some assumed that cinnabar, because of its deep red color, was ultimately the blood of a dragon. Pliny (*NH* XXXIII.116) reinforces this fantasy by recounting a red gore that is derived from a snake when

crushed by an elephant (Greppin 1992: 258, n. 28); the fabulous worm of Ananias is consistent with these other settings, and perhaps derivative. Arsenic (p. 63A)¹² is also found there (along with the chestnut), mined in Armenia and used in medicine.¹³ Dioscorides notes, though, that it makes one lose one's hair (V.104: ψιλοῖ δὲ καὶ τὰς τρίχας.).

The study of plants, and the nomenclature of plants, was well developed in many cultures, presumably by the late neolithic. Certainly the ancient Greeks knew well of plants; their use, other than for food, was largely medical and here we come upon the great texts of Galen in the second century A.D., whose analysis of over one thousand plants could not be the original work of one man, but was based on considerable studies before him. But even the fifth-century Hippocrates could not have written as he did without a substantial tradition centuries old. Likewise, the Armenians had a superb knowledge of plant lore, and certainly were aware, from an early date, of the Greek studies on plants. The Armenian plant studies reached their greatest peak under the Armenian physician Amirdovlat (fl. 1450), who wrote descriptions of 3754 plant names.¹⁴ Ancient Greek medicine, though, was not without some magical elements, common even in remotely practiced folk medicine to this day. Thus plants could be part of both magical and scientific medicine.

Ananias noted fruit trees, and this would certainly seem to be part of a geographer's purview, for fruits, in earlier ages that lacked easily available sweets and food technology in general, would have provided an otherwise missing diversity of edibles. Near the Pontic Sea Ananias found figs, bitter pomegranates, the sumac,¹⁵ quince, *palaxunk*,¹⁶ and the almond tree (p. 65A).¹⁷ Other common species of flora are mentioned in scattered

⁴ Page references will be to Hewsens's translated text, the L given first. Here L reads: *Լիւնի անդ ընոնսսս գազանն՝ որ պէս զբզն, զկոյն ձգէ եւ զորսորդն այրէ* (Ananias 1881: 15), and there is a ferocious man-killing white buffalo: *Լիւնի ի նմա սպիտակ եւ սպանող գոմէշ* (Ananias 1881: 14).

⁵ Possibly the hyena (1865: 596).

⁶ Literally, a 'tiger-horse,' probably the 'zebra' because of its stripes! (1865: 596).

⁷ *Ուր ոսկի եւ արծաթ հատանի երկրաբոժս իբրեւ գծնէբեկ* (Ananias 1865: 595).

⁸ *Լիւնի ի լերինս յայտոսիկ ընտիր կինաբառիս, որ է դէղ կարմիր* (Ananias 1865: 596).

⁹ The word cinnabar has cognates: Elamite *sinkabruš*, Akkadian *šingabruš*, Old Persian *siⁿkabruš* (Bailey 1990); it also is noted in the *Galen Dictionary* (Greppin 1985: 57–58), glossed there as Arm. *xruk*, but its medical value, according to Dioscorides, is limited, its principal use being as a red dye employed in making paint. χρῶνται δὲ αὐτῷ οἱ ζωγράφοι εἰς τὰς πολυτελεῖς τῶν τοίχων κοσμήσεις (V. 94).

¹⁰ *Լիւնի որդն սիգաբեբեալ ժարմատոժ՝ առ ի զարդ կարմրուեանէ*: (Ananias 1881: 34).

¹¹ (V. 94) ὁθεν ἐνόμισαν τινες αὐτὸ αἷμα εἶδρακόντιον.

¹² *Ունի գառիկ, եւ ի պտղոց շահեղակ*: (Ananias 1865: 608).

¹³ It is only in various compounds, such as arsenic trioxide, that arsenic is so deadly.

¹⁴ Some have suggested that Amirdovlat was influenced by Ibn al-Baytar's *Treatise on Plants*, but this does not explain how Amirdovlat acquired so many non-Arabic (and apparently Armenian) terms. Further, Ibn al-Baytar described only 2324 plant names, 1430 fewer than Amirdovlat.

¹⁵ This tree is used in tanning, but the sumac seed, when ground, is, to this day, spread on food to enhance flavor.

¹⁶ Possibly to be read as *ptilaxunk*, which would be 'plant-incense,' but this is otherwise unknown, and perhaps not consistent with the other tree names mentioned in this passage. But see *patangamušk* 'clove tree,' below.

¹⁷ *Եվ լիւնի ի Տայս նուռէ, աղտոր, սերկեւիլ, պալախուեկ եւ նուռ* (Ananias 1865: 610).

parts of the narrative: pistachio tree, thistleseed, ginger, three types of aloë wood, along with wheat and rye.

More common by far than medicaments and fruit trees is the mention, in the *Geography*, of aromatics, derived from exudates (camphor, balsam, et al.), trees (aloë, sandalwood, et al.) and flowers (rose, violet, et al.). Ananias largely derived these aromatics from two areas, India and Arabia, and though many of the terms he uses are well known, others are not. Some seem to be of Arabic origin, others are Persian or Indic. Though Hewsen has been able to translate well many of these terms, and give annotations, I wish in some cases to revise his translation, and make certain additions, and it is upon those two passages, about the aromatic plants of Arabia and India, that I will concentrate.

These references, those to Indian and Arabian plants, are always to aromatic plants, mostly to aromatic woods, but to sweet-smelling flowers as well. Rarely do any of these plants have a significant medical use.¹⁸ Aromatics were of course of great interest in ancient western Asia, to which the Old Testament bears sufficient witness. However, the earliest Christians scorned incense and scented woods. It was not until the fourth century that these became part of the ritual, the smoke being symbolic of souls rising to heaven. However, in the Armenian literature of the fifth through seventh centuries there is almost no reference to aromatic woods other than in translated texts referring to the Bible; aromatic flowers also have a very low frequency of citation. I was able to locate one instance of multiple citations of aromatics in Agathangelos, but that occurs in a passage that had religious reference and a Biblical cadence.¹⁹ Even Narekatsi has only one aromatic reference, and that too

has a sacerdotal ring.²⁰ Mkhitar Gosh, in his *Fables* of the late twelfth century, wrote of the beauty of the lily and violet²¹ and of the slender rose,²² but aromatics did not much concern him otherwise. In the one instance when they are mentioned, they are used as a digestive: “Oh bitter vetch and sandalwood, how good you are for the belly.”²³ Arm. *čandi* ‘sandalwood’ is also noted in Amirdovlat no. 3533.

The S version (Ananias 1865: 612) and the L version (Ananias 1991: 39) read (pp. 72, 72A):²⁴

Եւղբ անոյշք ի նմա, եւ ծաղիկք վեշտասան՝
Հաւլի, (խալի), ջափու (ջաբրիկ), մաղապ (մա-
ղադ), խալսկ (խաշուկ), քթի (քեդի), աղխունա
(Հունաղ Հուար), խալար (խատար), բուխտակ,
նարդոս (նարդին), բալասան, բան, յասմիկ, բան
(նուան ծաղիկ), վարդ, մանուշակ, մարգգոշ
(Նարզը գոշ).

Sweet oils (aromatics) are there (in Arabia), and flowers, sixteen in all: *hali* (*xali*), *jab^cu*, *jabri*²⁵ (*jabrik*), *matap* (*matad*), *xalsk* (*xašuk*), *k^cfi* (*k^cedi*), *atxuna* (*hunathuar*), *xalar*, (*xatar*) *buxtak*, *nardos* (*nardin*), *balasan*, *ban*, *yasmik*, *naran* (*n^ran calik*), *vard*, *manušak*, *marzgoš* (*marzigoš*).

1. Arm. *hali* or *xali*. This plant is listed in Bedevian, no. 3042, as ‘saltwort, *Salsola kali* L.,’²⁶ which is inappropriate. Bedevian also lists a similar sounding floral term, Ar. *قلى* *qalli* as ‘glasswort, *Salicornia herbacea* L., but this too is a non-aromatic succulent. Ghazarian

¹⁸ I have noted in place when such a plant is discussed in Amirdovlat. And though Amirdovlat seems to have mentioned the medical value of any plant known by name to the Armenians, the aromatics he mentions have a rather small medical value. Those in the *Galen Dictionary* are the rose, violet, aloë, nard, sweet marjoram, and clove tree. This small number implies that Ananias had little interest in medicine, and indeed, of the many scholarly manuscripts he authored, none touched significantly on medical or pharmaceutical matters. Armenian medicine did not develop until the coming of the Arabs, who brought with them their energetic interpretation of Greek medicine.

¹⁹ Սոյնպէս եւ գունակ գունակ եւ երփն երփն ծաղիկանցն. որպէս մանրագորն եւ վարդն եւ շուշանն եւ ասպուզանն եւ յասմիկն եւ անխարն եւ ամնակն եւ ներգիսն եւ շամպղիտակն եւ մեղրուին, հօրօթն եւ մօրօտն եւ մանիշակ. “So there are many many kinds and colors of flowers, like the common mandrake and rose, the lily and sea

bind-weed (!), and jasmine and lotus, and Egyptian lotus and Hermodactyle, and rose-campion, and jonquil and violet” (Agathangelos 1909: 330–31; from *The Teachings of St. Gregory*).

²⁰ Այլ ծաղիկ դաշտի եւ շուշան Հովտաց եւ նարդոս քնաիր “but the flower of the plain and lily of the valley, and the elegant nard” (Gregory 1948: 257).

²¹ Զի գովիչքն (մանիշակ) նման եւս ասէին շուշանի: (Mkhitar 1854: no. 28).

²² Եւ փանակութեամբ վարդ, եւ այնքան պատուին: (Mkhitar 1854: no. 15).

²³ Ո խուրու եւ ճանդի, որքան բարի էք որովայնի: (Mkhitar 1854: no. 47).

²⁴ The L version, when different, is put second, in parenthesis.

²⁵ This reading is supported in the apparatus.

²⁶ Collenette 1985: 124, notes that it is a succulent-leaved herb, but is specifically a non-aromatic. A term *hili* appears in a medieval Georgian medical manuscript, the text of which is printed in E. Takajšvili’s Описание рукописей: Общество распространения грамотности среди грузинского населения (Tbilisi 1902–4), vol. 1:192–94. There it is in the Georgian passage *alila de vaqila: hili aris*. This can be translated no better than “*alila* and *vaqila*: it is *hili*.”

(1981: no. 654) mentions *halik*^c 'felwort, *Swertia*, sp. aff. *polynectaria*,' but this is noted in Colenette 1985: 252 as a leafy herb having white flowers with no scent. Bedevian gives a second meaning for the *qalli* 'glasswort, *Anabasis setifera* Moq.,²⁷ but this too is a succulent, and therefore not appropriate. More likely is Adjarian's suggestion (*HAB*², 3.42) that we are dealing with Arm. *haša*, with the not uncommon misreading of 𐌶 (*l*) for 𐌶 (*š*). Arm. *haša* would be from Ar. حاشا *hāšā* 'headed thyme, *Thymus capitatus* Hoffmg. & Link,' which is indeed an aromatic producing a sweet oil. The word *hali* found in this text may better be emended to *haša*. The term is listed in Amirdovlat (no. 1317) as *hašay*.

2. Arm. *jap^cu* or *jap^crik* are two readings; the latter is otherwise unknown (and cannot be Arabic), but the former, Arm. *jap^cu* is known, being a 'hawthorn, *Crataegus oxyantha* L.,' but this is not an aromatic, producing no sweet oil. There are other readings in the apparatus to this edition, not mentioned by Hewsen, and I might cite the variant Arm. *jabri*, which corresponds to Ar. جمع *jarba^c* (with an ^c*ayn*), a type of forsythia, the 'golden bells, *Forsythia suspensa* Vahl.' This is of the family *Oleaceae*, and does produce aromatic oils, and hence is a likely Arabic equivalent for Am. *jabri*.

3. Arm. *matap* (*matad*) might be a corruption of Arm. *mat^c* 'galbanum plant, *Ferula galbaniflua* Boise & Bohse,' which produces an aromatic gum resin. The term is originally Greek, μάλα. Amirdovlat lists a *matat* (no. 2072), but identifies it as the word for three plants: 'wild mandrak,' or 'egg plant'; a 'small truffle' (none of which is appropriate); and 'galbanum,' which seems entirely appropriate.

4. Arm. *xalsk* (*xašuk*) is a contortion of *xašak^c* 'bdellium, *Commiphora africana* Engl.,²⁸ again an example of the not uncommon confusion between 𐌶 (*l*) and 𐌶 (*š*). Bdelium is of course a strong aromatic, somewhat similar to myrrh, and would be most appropriate here. The term is present in Amirdovlat no. 1125 where it is glossed by Arm. *mutl* 'bdellium.'

5–6. Arm. *k^cedxalhuna* is often divided into two stems. Here Hewsen, following Adjarian *HAB*² (1.100), notes we might have two terms. *k^cedi* and *alhuna*, the latter which could be Arm. *axuna*, glossed there as a 'type of mustard, *Sinapi silvestris*,²⁹ not otherwise known. I could propose a derivation from Ar. (via Persian اقحوان³⁰) *aqhawān*, which means 'chamomile' in

Persian, and in Arabic has a three-fold value, all with essential oils, and belonging to the family *Compositae*. They are (a) 'fever-few chrysanthemum, *Chrysanthemum parthenium* Bernth.,' and (b) 'pot marigold, *Calendula officinalis* L.,' and (c) 'dog's fennel, *Anthemis cotula* L.' Arm. *k^cedi* remains a mystery, and it is not at all clear that the term *k^cedxalhuna* is to be taken apart.

7. Arm. *xalara* is translated as 'bitter vetch, *Lathyrus sativus* L.,' but this is not appropriate, being a legume used principally for fodder. Not much better would be a reading of *xatar* 'screw pine, pandang oil plant, *Pandanus odoratissimus* L.' This would be an aromatic imported from the east, the Arabic term for which is كادي *kādī*. This gloss appears unlikely, for their wealth was then, in the early seventh century, not sufficient for Arabs to import such distant items in significant volume. A reading as *xašar* 'rattan cane, *Calamus rotang* L.' is also uneventful, the rattan not being aromatic, and not indigenous to Arabia.

8. Arm. *buxtak*. This is known, according to Bedevian no. 1899, as 'candytuft, *Iberis numidica* Jord.' It is from the family *Cruciferae* and all genera have secretory cells containing myrosin, which has a pungent odor. The term appears to be a hapax in the *Geography* of Ananias.³¹

9. Arm. *nardos* 'nard, *nardus stricta* L.,' a loan, from Gk. νάρδος,³² clearly an aromatic, as Hewsen points out; it is listed in Amirdovlat as *nardin*, no. 2351.

10. Arm. *bal(a)san* 'balm of Gilead, balsam of Mecca, *Commiphora opobalsamum* Engl.,' as Hewsen notes. A loanword from Arabic, بلسان *balasān*. Clearly an aromatic with secretory cells. Amirdovlat no. 568.

11. Arm. *ban* 'ben-oil tree, *Moringa aptera* Gaertn.' Hewsen gives 'Belleric myrobalam, *Terminalia bellerica* Roxb.,' but this is less likely, being Ar. بليج *balilaj*, whereas the *Moringa aptera* is Ar. البان *al-bān*, from which the Armenian term was derived. It is known in Amirdovlat no. 2633.

12. Arm. *yasmik* 'white-flowered jasmine, *Jasminum officinale* L.,' as noted by Hewsen. From A. ياسمين *yāsmīn* id.

13. Arm. *n^can catik*. This is read by Hewsen as *nardin* 'nard,' but this would be the second use of nard in this list (see no. 9 above). The L text reads *n^can catik* 'flower of the pomegranate (*nu^cn*), *Punica granatum* L.,' surely an aromatic. Amirdovlat no. 1932.

²⁷ There is no English term for this plant; the French is 'Anabase sétifère.'

²⁸ This was brought to Arabia from Ethiopia.

²⁹ I do not know how Adjarian obtained this gloss.

³⁰ Adjarian gives a form Per. اکحون *akhūn* and Ar. اقحون *aqhūn*, but these forms are otherwise not known to me.

³¹ I do not know how this term came to be identified in Bedevian; it is not in Ghazarian 1981.

³² This is glossed in Liddell & Scott as 'spikenard, *Nardostachys jatmansi* DC'; Ghazarian 1981 no. 879, glosses the term as a *Lamiaceae*.

14. Arm. *vard* 'the rose, *Rosa* Tourn.,' as noted in Hewsen. Amirdovlat no. 3247.

15. Arm. *manušak* 'the violet, *Viola odorata* L.,' as noted by Hewsen. Amirdovlat no. 2047.

16. Arm. *marzgoš* is glossed by Hewsen as 'chickweed,' but this cannot be right, for chickweed contains no essential oils, nor is it considered a flower. Ghazarian (1981: 66) notes *marzangoš* which he, following Bedevian (no. 2481), calls 'sweet marjoram, *Origanum marjorana* L.,' and which is surely an aromatic and a more appropriate gloss. Its medicinal values are discussed in Amirdovlat no. 2032.³³

There is also, in Ananias' discussion of plants (pp. 75, 75A), a large number of aromatics (*bovičayk*^c) that are found in India; a certain number of those terms appear to be Indic, and will here be so glossed (Ananias 1865: 615; 1881: 44):

ամենայն բովիճաք, հալուէ (հալւա), փաղանգամուշկ, քափուր (կափուր), ճանդան, նալիբուլակ (բուսճառա), հրբուլակ (ախրիբուլակ), գազերբուլակ (գոզիբուլակ), գոյիբուլակ, (ազսիբուլակ) կասիմոն, գովոդակ (դրւադակ, քակոդակ), շահաւոր (շաբաւորսար), մարգարիշար:

All aromatics: *haluē*, *p^catangamušk*, *k^cap^cur*, *čandan*, *nayibuak* (*boačars*), *hirbuak* (*axiriboyek*), *gazerbuak* (*goziboyek*), *goyibuak* (*agsiboyek*), *kasimon*, *govotak* (*dəwatak*, *k^cakotak*), *šahawor*, *mardarišar*.

1. Arm. *haluē*, noted by Hewsen as 'aloë wood, *Aloëxylon agallochum* Lour.'³⁴

2. Arm. *p^catangamušk*. This is glossed variously in Bedevian as 'maidenhair, *Adiantum capillus-veneris* L.:' and 'soft-haired basil, *Ocimum pilosum* var. *O. basilicum* Willd.' The former is a leafy fern, with no odor, and the latter is a bushy leaf herb, very aromatic, but not a tree.³⁵ However, this term does appear in the *Galen Dictionary* (Greppin 1985: 191) where Arm. *p^catangamušk* is glossed by Gk. καρυόφυλλον 'dried flowerbud of the clove tree, *Eugenia karyophyllata* Thunb.,' an entirely acceptable reference to an aromatic tree.

3. Arm. *k^cap^cur*³⁶ 'camphor (tree), *Cinnamomum camphora* Nees & Eberm.,' as Hewsen notes.

4. Arm. *čandan*. This word is known in a remarkable number of spellings: *čandal*, *č^candan*, *čandi*, *santal*, and with alternate stems as well: *čermak*, and *krp^cul* (Bedevian no. 3064)—'white sandal wood, *Santalum album* L.,' as Hewsen notes. The word is derived, perhaps, from Indic; cf. Skt. *candana*-.

5. Arm. *nayibuak*. Hewsen, quoting Cardona (1969: 94 n. 16), breaks this word down as Pers. نای *nayī* 'cane' plus بویاک *būyāk*³⁷ 'aromatic,' but what cane it refers to is unknown.

6. Arm. *hiruak*. Hewsen notes the Per. خیری *xirī*, and this would be the origin for Arm. *hir-/xir-* 'pansy, *Viola tricolor* L. var. *hortensis* DC.' Arm. *xiri* is used in Amirdovlat (nos. 2233, 2234) where it is identified as the 'gilliflower, *Matthiola livida* DC.' This pansy (family *Violaceae*) does not have secretory elements (Metcalfe and Chalk 1950: 104) but the gilliflower has myrosin cells³⁸ (Metcalfe and Chalk 1950: 80). It is unlikely that this identification is appropriate, since we seem to be dealing with trees here, not flowers.

7. Arm. *gazerbuak* 'nutmeg tree, *Myriophyllum spicatum* L.,' from Indic **gauz* (note Per. جوز *ǰauz*) 'nutmeg,' and Arm. *gazerbuak* would mean 'scented nutmeg.' The term Arm. *ǰuzēr* is listed in Amirdovlat (no. 789) but without a clear gloss. Arm. *gazerbuak* is in Bedevian (no. 2363) 'nutmeg.'

8. Arm. *goyibuak*. Unknown, but *buak* is, of course, 'aromatic.'

9. Arm. *kasimon* 'cassia, *Acacia farnesiana* Willd.' An aromatic also called 'sponge tree'; noted by Hewsen.

10. Arm. *govatak* (S) or *k^cakotak* (L). Probably related to Indic, Skt. *kolaka-* 'Indian bdellium, *Commiphora mukul* Engl.,' an appropriate tree.

11. Arm. *šahawarsar*. This might be two Indic plant names: Skt. *śahā* 'aloe' (Varāha-mihira's *Brhat*), and *rāsnā* 'bdellium' (*Bhāvaprakāśa*). We should understand that neither of these glosses can be considered absolute; yet they do point to aromatic Indic woods.

12. Arm. (*mar*)*dasišak*. The final morpheme *šak* is related to Skt. *śāka* 'teak'; *dari* is most likely a corruption of Skt. *dāru*, Per. دار *dār* 'wood:' hence 'teakwood,' a resinous aromatic.

³³ Among other characteristics, it expels the mense and helps nausea.

³⁴ There was a shift of meaning for aloë in ancient times, and it passed from being the name for a succulent with fleshy leaves, imported from Arabia and elsewhere, to an aromatic wood of Indian origin (Greppin 1988).

³⁵ So notes Collenette 1985: 406, and 274.

³⁶ This could also be *k^camp^cur*, or later *k^cafur* (Amirdovlat no. 3533).

³⁷ MP *būyāk* id.

³⁸ The gilliflower is noted in Bos's edition (1992) of Qusta ibn Luqa's work on health needs for the hajj, where the oil of the gilliflower (كدهن الخيري) is said to be useful in massages.

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